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CONNOLLY BOVE LODGE & HUTZ, LLP
P O BOX 2207
WILMINGTON, DE 19899

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/579,164
Filing Date: May 29, 2007
Appellant(s): TELTSCHIK ET AL.

Michelle C. Kim
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed June 18, 2010 appealing from the Office action mailed December 18, 2009.

(1) Real party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

Examiner is not aware of any related proceedings.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellants' statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection in the brief is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

Number	Name	Date
US 5,889,116	Suzuki et al.	03-1999
WO 01/88615	Dudek et al.	11-2001

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 5,889,116) in view of Dudek et al. (WO 01/88615 A1).

Regarding claims 1-15, Suzuki et al. disclose a process for the production of the flexographic printing plate by thermal development (abstract). The flexographic printing plate comprises a stable substrate and photopolymerizable layer (col. 10, lines 9-26). The photopolymerizable relief-forming layer comprises of an elastomeric binder (col. 2, line 31), ethylenically unsaturated monomers (col. 2, lines 37-38), plasticizer (column 9, lines 50-56) and photoinitiator (col. 9, lines 29-35). Suzuki et al. disclose an imagewise exposure of the photopolymerizable layer to actinic radiation (page 10, lines 46-56), heating of the exposed flexographic printing plate to a temperature of from 40 to 200 °C (example 1). Suzuki et al. disclose the elastomeric binder is at least one styrene/butadiene copolymer having a molecular

weight of from 80000 to 250000 g/mol and styrene content of form 15 to 35% by weight , based on the binder, the proportion of butadiene present in 1,2-linked form being at least 15% by weight, based on the binder, and the amount of the styrene/butadiene block copolymer is from 35 to 50% by weight and that of the plasticizer is from 25 to 50% by weight, based in each case on the sum of all components of the relief-forming layer (col. 7, lines 4-51 & col. 8, lines 29-33 & example 1). Suzuki et al. disclose a mixture furthermore comprises at least one mineral oil (petroleum resin) and at least polybutadiene oil (col. 9, lines 19-56). Suzuki et al. disclose the photopolymerizable layer additionally comprises up to 20% by weight of at least one secondary binder (copolymer; col. 1, line 65- col. 2, line 40).

However, Suzuki et al. do not explicitly disclose the process step of removal of the softened, unpolymerized parts of the relief-forming layer with formation of a printing relief or imagewise exposure on a digitally imageable layer through a mask. Dudek et al. disclose a process for preparing a flexographic printing plate (abstract) which comprises a dimensionally stable substrate (support; page 9, lines 23-38) and photopolymerizable layer (page 10, lines 8-9). Dudek et al. disclose the process step of removal of the unpolymerized parts of the photopolymerizable layer (page 15, lines 6-36) while in contact with an absorbent material (page 15, line 37- page 6, line 32). The removal process aids in providing internal strength and tear resistance to temperature up to, including and slightly beyond the melting temperature of the uncured photopolymerizable material. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the removal process step of Dudek et al. in the process of Suzuki et al. because Dudek et al. disclose the removal process aids in providing internal strength and tear resistance to temperature up to, including and slightly beyond the

melting temperature of the uncured photopolymerizable material. Dudek et al. disclose the imagewise exposure of the photosensitive element to actinic radiation may be conducted in the presence or absence of atmospheric oxygen for photosensitive elements having an in situ mask (page 14, lines 22-24) in order to assure good contact between the image transparency and the photosensitive element. The mask can be an IR-ablative mask or thermographic mask (page 13, lines 15-30). The flexographic printing element has a digitally imageable layer (page 13, lines 5-9). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include imagewise exposure on a digitally imageable layer through a mask as disclosed by Dudek et al. in the process of Suzuki et al. because Dudek et al. disclose the imagewise exposure on a digitally imageable layer through a mask aids in providing good contact between the image transparency and the photosensitive element.

(10) Response to Argument

1. Appellant argues that a prima facie case of obviousness is not made because Suzuki and Dudek each teach away from their combination.

Examiner disagrees with Appellant that Suzuki and Dudek each teach away from their combination. Dudek is only added to teach the process step of the removal of the softened, unpolymerized parts of the relief-forming layer with formation of a printing relief and the step of imagewise exposure on a digitally imageable layer through a mask, and not to disclose the relief-forming layer as claimed by the present claims. The present claims only recite a process comprising at least the following steps of imagewise exposure of the photopolymerizable layer to actinic radiation, heating of the exposed printing element to a certain temperature and removal of the softened, unpolymerized parts of the relief-forming layer with a formation of a printing relief.

There are no specific steps for thermally developing the printing plate in an of the instant claims and there is no specific order to process the printing plate of instant claim 1. Suzuki explicitly discloses a photosensitive composition used to prepare a flexographic printing plate (abstract) comprising imagewise exposed to light or actinic radiation (col. 10, lines 46-51). It is well known in the art to use actinic radiation as the exposing light as recited in col. 1, line 20-27 of Suzuki. Also, Suzuki et al. disclose the exposed printing plate is developed at a temperature of 50 degrees C in col. 11, lines 19-25 and washed and again dried at 70 degrees C in col. 11, lines 26-28. Whether or not the term thermal is recited in the reference is immaterial. The plate of Suzuki is heated and dried. Heating and drying represent a thermal process. The plate must to be heated to reach 50 degrees C. The plate must again be heated to reach 70 degrees C. Suzuki discloses the photosensitive composition that is used to produce the printing plate is processed by press-formed the photosensitive composition into a rubber plate to a temperature of 110 to 130 degrees C. Examiner agrees that the phrase, thermal is not explicitly recited by the reference. However, the term "thermal" is defined as a thermal property which is dependent of a temperature or related to or caused by heat. Drying is also a form of heating. The flexographic printing plate of Suzuki is exposing the plate to radiation, then developing with a solution and heated a temperature. Since the plate is heated to a temperature, then the process is considered to be thermal. The present claims contains open language, "comprises". Therefore, the plate of the present claims could be developed also with a developing solution. Further, appellant has not shown any evidence that the Suzuki's photosensitive composition cannot be used successfully with flexographic printing plates of the claimed invention.

Dudek discloses a process for preparing a flexographic printing plate (abstract) which comprise of a dimensionally stable substrate (support; page 9, lines 23-38) and photopolymerizable layer (page 10, lines 8-9). Dudek discloses the process step of the removal of the unpolymerized parts of the photopolymerizable layer (page 15, lines 6-36) while in contact with an absorbent material (page 15, line 37- page 6, line 32). Dudek discloses the imagewise exposure of the photosensitive element to actinic radiation may be conducted in the presence or absence of atmospheric oxygen for photosensitive elements having an in situ mask (page 14, lines 22-24) in order to assure good contact between the image transparency and the photosensitive element. Suzuki and Dudek are analogous art in the flexographic printing plate field. Dudek teaches that by incorporating a removal step of the unpolymerized parts of the relief-forming layer aids, while in contact with an absorbent material allows the flexographic printing plates to aid in having internal strength and tear resistance. See page 17. Further, Dudek teaches that the removal of the unpolymerized parts of the relief-forming layer allows for a flexographic printing plate to be produced without distortion. See page 15, lines 22-36. Suzuki et al. disclose a process for the production of the flexographic printing plate by thermal development (abstract). Suzuki et al. disclose the elastomeric binder is at least one styrene/butadiene copolymer having a molecular weight of from 80000 to 250000 g/mol and styrene content of form 15 to 35% by weight , based on the binder, the proportion of butadiene present in 1,2-linked form being at least 15% by weight, based on the binder, and the amount of the styrene/butadiene block copolymer is from 35 to 50% by weight and that of the plasticizer is from 25 to 50% by weight, based in each case on the sum of all components of the relief-forming layer (col. 7, lines 4-51 & col. 8, lines 29-33 & example 1). Therefore, it would have been

obvious to one of ordinary skill in the art at the time of the invention to modify the process of Suzuki in view of tear resistance, internal strength of the plate and distortion effects. Therefore, the rejections are maintained.

2. Appellant submits that the entire disclosure of Suzuki is focused on solving a problem that is specific to solvent development of photosensitive composition, which the photosensitive materials used to prepare flexographic printing plate are washed at a high rate so that the relief is easily reformed as part of the solvent development process. However, this high rate of washing cannot be performed on photosensitive rubber plates comprising elastomers, such as styrene-butadiene block copolymers. Suzuki is silent to thermal development.

Examiner disagrees with Appellant. Suzuki may disclose a high rate of washing, however the examiner maintains that Suzuki also teaches **heating** (thermal) the plate to 50° C and further discloses **drying** (thermal) the plate. See column 11, lines 19-28. The heating and drying steps disclosed by Suzuki are thermal processes. Appellant's claims do not exclude other steps. Claim 1 merely reads thermal development. Heating and drying define thermal development. Whether the high rate of washing can be used on the elastomer is not important. Suzuki continues to teach a thermal process by drying and heating. Again appellant's claims do not exclude other steps. Suzuki clearly teaches heating during development, which defines thermal development. Also, Suzuki et al. disclose the exposed printing plate is developed at a temperature of 50 degrees C in col. 11, lines 19-25 and washed and again dried at 70 degrees C in col. 11, lines 26-28.

3. Appellant argues that Suzuki is unconcerned with and completely silent as to thermal development, it focused entirely on solving a problem that is specific to the solvent development

process by a photosensitive composition that is particularly adapted for that process. As such, Suzuki cannot be relied upon as teaching any part of a thermal development process.

Examiner disagrees with Appellant that Suzuki is unconcerned with and completely silent as to thermal development. Whether Suzuki refers to thermal development is not important. Suzuki heats and dries the plate, which are thermal processes.

4. Appellants argues that a prima facie case obviousness is not made here, as Suzuki and Dudek each teach away from their combination. As pointed out in Appellant's specification, Dudek "states that commercially available flexographic printing elements intended for development of the solvents are frequently unsuitable for thermal development and instead proposes flexographic printing elements whose relief-forming layer has certain dynamic mechanical characteristics." To that end, Dudek discloses only a thermal development process, specifically distinguishing it form solvent development process. Indeed, it is improper to combine references, because the references teach away from their combination.

Examiner disagrees with Appellant that Suzuki and Dudek each teach away from their combination. Dudek discloses a process for preparing a flexographic printing plate (abstract) which comprise of a dimensionally stable substrate (support; page 9, lines 23-38) and photopolymerizable layer (page 10, lines 8-9). Dudek discloses the process step of the removal of the unpolymerized parts of the photopolymerizable layer (page 15, lines 6-36) while in contact with an absorbent material (page 15, line 37- page 6, line 32).

While Dudek may teach solvent-less development, Dudek was not added to show development. Dudek is only added to teach the process step of the removal of the softened, unpolymerized parts of the relief-forming layer with formation of a printing relief and the step of

imagewise exposure on a digitally imageable layer through a mask as recited in the instant claims. Dudek and Suzuki can be combined because Suzuki teaches heating the plate and Dudek also teaches heating the plate. Both references are making flexographic printing plates, which includes relief plates. It is noted that Suzuki does not used the term thermal, however, it does not mean thermal (heating) development is not involved in the process. Appellant's claims only recite thermal developing, which on its face, does not exclude solvents. Present claim 1 also offers no steps for thermal development. Present claim 1 also reads comprising. Therefore, other steps may well be included.

5. *Appellant argues a combination of Suzuki and Dudek would not only change the fundamental principle of operation of each of these references, it would render the references unsatisfactory for each of their respective purposes.*

Examiner disagrees with Appellant that Suzuki and Dudek can not be combined to disclose the claimed invention. Present application only recites a process comprising at least the following steps of imagewise exposure of the photopolymerizable layer to actinic radiation, heating of the exposed printing element to a certain temperature and removal of the softened, unpolymerized parts of the relief-forming layer with a formation of a printing relief. There is no recitation in the present application's claim 1 of thermally developing the printing plate and there is no specific order to process the printing plate. Suzuki et al. disclose the exposed printing plate is developed at a temperature of 50 degrees C in col. 11, lines 19-25 and washed and again dried at 70 degrees C in col. 11, lines 26-28. Example of Suzuki disclosed the photosensitive composition that is used to produce the printing plate is processed by press-formed the photosensitive composition into a rubber plate to a temperature of 110 to 130 degrees C.

Examiner agrees that the phrase, thermal is not explicitly recited by the reference. The term "thermal" is defined as a thermal property which is dependent of a temperature or related to or caused by heat. Drying is a form of heating. The flexographic printing plate of Suzuki is exposing the plate to radiation, then developing with a solution and heated a temperature. Since the plate is heated at a temperature, then the plate is considered to be thermal. The present application contains open language: "comprises" and therefore, the plate of the present application could be developed also with a developing solution. Appellant has not showed any evidence that the Suzuki's photosensitive composition can not be used successfully with flexographic printing plates of the claimed invention.

6. Appellant argues that Suzuki discloses a photosensitive composition that is particularly suited for the solvent development processes. To that end, Suzuki discloses that the amount of elastomer contained in the photosensitive composition is critical. Suzuki discloses that the amount of elastomer contained in the photosensitive composition is in the range of 20 to 65 parts by weight, based on the sum of the elastomer and copolymer. In contrast, Dudek discloses that its photosensitive composition preferably comprises at least 60% by of an elastomeric binder and that surprisingly , it has been found that the photopolymerizable elastomeric layer needs to be in a particular range of certain rheological properties o endure the generation of a desired relief and also good printing performance after thermal treatment. Given the teachings of Dudek, one would not expect the photosensitive composition of Suzuki to be susceptible to successful thermal development.

Examiner disagrees with Appellant. Dudek is only added to teach the process step of the removal of the softened, unpolymerized parts of the relief-forming layer with formation of a

printing relief and the step of imagewise exposure on a digitally imageable layer through a mask, and not to disclose the relief-forming layer as claimed by the present application. Appellant's arguments concerning the different amounts of elastomer used by Suzuki and Dudek are not convincing, because the ranges used by Suzuki and Dudek overlap.

7. Appellant's data shows unexpected results sufficient to overcome a prima facie case of obviousness. Appellant argues that presented data in the specification shows the criticality of this claimed range in achieving successful thermal development of the photopolymerizable relief-forming layer. Indeed, based on the disclosure of Dudek, a photosensitive composition having less than 60% by weigh of an elastomeric binder would not be expected to be good candidate for thermal development. The flexographic printing plates produced from comparative examples have an amount of the elastomeric binder that falls outside of the claimed ranges: 52% and 31% by weight. Table 1 shows all of the flexographic printing elements provide suitable results from conventional solvent development, as indicated by the positive exposure latitude (ELAT) and in table 2, however only the flexographic printing elements form examples 1-B and 2-B having the elastomeric binder within the claimed range, showed a positive ELAT following thermal development. The positive ELAT obtained for the claimed flexographic printing element is significant to the invention.

Examiner disagrees that Appellants' data shows unexpected results sufficient to overcome any such prima facie case of obviousness. It is noted that Appellant is entering new evidence in regards to data of Table 1 and Table 2. This evidence was not previously presented and is not been considered at this time. However, if the examiner does consider the evidence, the data presented only shows comparison of present claims and the Dudek reference. However,

Dudek was never used in the rejection to show amounts of elastomeric binders. Suzuki clearly shows the ranges of the elastomeric binders as claimed. Dudek is only added to teach the process step of the removal of the softened, unpolymerized parts of the relief-forming layer with formation of a printing relief and the step of imagewise exposure on a digitally imageable layer through a mask, and not to disclose the relief-forming layer as claimed by the present application. However, if the Examiner would consider the Appellant's data it would not be sufficient to show unexpected results over Suzuki in view of Dudek. Therefore, the Appellant's data is insufficient to overcome prima facie case of obviousness over Suzuki in view of Dudek.

8. Appellant argues that the comparative data presented in Appellants' specification demonstrate the unexpectedly superior results which are obtained from flexographic printing elements which comprise: "the amount of styrene/butadiene copolymer from 35 to 50% by weight and the proportion of butadiene present in 1,2-linked form being at least 15% by weight based on the binder. Therefore, even assuming that the Examiner has made a prima facie case of obviousness, the unexpected results of the claimed range demonstrated by Appellants' data is sufficient to overcome any such prima facie case of obviousness.

Examiner disagrees. Appellant has not shown or proven how the data overcomes the cited rejections, since the amounts used in the data is only from the Dudek reference. The examiner used the amounts from Suzuki in the rejection. Therefore, any data shown using Dudek's amount is irrelevant.

9. Appellant argues that neither Suzuki nor Dudek disclose, teach or suggest, "wherein plasticizer is a mixture of plasticizers which comprises at least one polybutadiene oil" as recited in claim 4.

Examiner disagrees that neither Suzuki nor Dudek disclose or teach or suggest that the plasticizer is a mixture of plasticizers which comprises at least one polybutadiene oil. Dudek is only added to teach the process step of the removal of the softened, unpolymerized parts of the relief-forming layer with formation of a printing relief and the step of imagewise exposure on a digitally imageable layer through a mask, and not to disclose the plasticizers. Suzuki explicitly discloses the photosensitive composition comprises plasticizers such as polybutadiene oils, which meets the limitation of claim 4 of the present application. See column 9, lines 49-56 and examples.

10. Appellant argues that neither Suzuki nor Dudek disclose, teach or suggest, "wherein the plasticizer is a mixture of plasticizers which comprises at least one mineral oil" as recited in claim 5.

Examiner disagrees that neither Suzuki nor Dudek disclose or teach or suggest that the plasticizer is a mixture of plasticizers which comprises at least one mineral oil. Dudek is only added to teach the process step of the removal of the softened, unpolymerized parts of the relief-forming layer with formation of a printing relief and the step of imagewise exposure on a digitally imageable layer through a mask, and not to disclose the plasticizers. Suzuki explicitly discloses the photosensitive composition comprises plasticizers such as liquid petroleum oil. Liquid petroleum oil is the same as mineral oil, meeting the limitation of claim 5 of the present application. See column 9, lines 49-56 and examples.

11. Appellant argues that neither Suzuki nor Dudek disclose, teach or suggest, "wherein at least 40% by weight of the butadiene units in the polybutadiene oil are incorporated in 1,2-, linked form" as recited in claim 6.

Examiner disagrees that neither Suzuki nor Dudek disclose or teach or suggest that the relief-forming layer comprises at least 40% by weight of the butadiene units are in 1,2-linked form. Dudek is only added to teach the process step of the removal of the softened, unpolymerized parts of the relief-forming layer with formation of a printing relief and the step of imagewise exposure on a digitally imageable layer through a mask, and not to disclose the 1,2-linked form of the polybutadiene. Suzuki explicitly discloses the photosensitive composition comprises 10 to 70% (includes at least 40%) by weight of the 1,2-linked form in the polybutadiene, which meets the limitation of claim 6 of the present application. See column 7, lines 35-51 and examples.

12. Appellant argues that neither Suzuki nor Dudek disclose, teach or suggest, "wherein the relief-forming layer additionally comprises up to 20% by weight of at least one secondary binder" as recited in claim 7.

Examiner disagrees that neither Suzuki nor Dudek disclose or teach or suggest that the relief-forming layer additionally comprises at least one secondary binder. Dudek is only added to teach the process step of the removal of the softened, unpolymerized parts of the relief-forming layer with formation of a printing relief and the step of imagewise exposure on a digitally imageable layer through a mask, and not to disclose a secondary binder. Suzuki explicitly discloses the photosensitive composition comprises up to 20% by weight of at least one secondary binder (copolymer), which is the same range as appellant's claim 7. See column 1, line 65- column 2, line 11 and examples.

11. Related Proceeding(s) Appendix

None.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Chanceity N Robinson/

Examiner, Art Unit 1795

/Cynthia H Kelly/

Supervisory Patent Examiner, Art Unit 1795

Conferees:

/Cynthia H Kelly/

Supervisory Patent Examiner, Art Unit 1795

/Christine Tierney/
Supervisory Patent Examiner, Art Unit 1700